

OIE Collaborating Centres Reports Activities

Activities in 2021

This report has been submitted : 2022-01-18 19:25:17

Title of collaborating centre:	Parasites zoonotiques transmis par les aliments Europe
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ToR: To provide services to the OIE, in particular within the region, in the designated specialty, in support of the implementation of OIE policies and, where required, seek for collaboration with OIE Reference Laboratories

ToR: To identify and maintain existing expertise, in particular within its region

1. Activities as a centre of research, expertise, standardisation and dissemination of techniques within the remit of the mandate given by the OIE

Disease control	
Title of activity	Scope
Confirmation of diagnosis	Activity of confirmation regarding official control of meat for trichinella larvae.
Scientific advises	Scientists provide advices or expertise at the request of : - the Ministry of Agriculture for regulatory aspects; - Anses for drafting of opinions; - Accreditation body for quality assurance; - routine labs for their accreditation.
Epidemiology, surveillance, risk assessment, modelling	
Title of activity	Scope
Surveillance of Trichinella circulation within livestock, domestic animals and wildlife	Official test by artificial digestion of meat allows the monitoring of the parasite circulation in pigs, horses and wildboars. A passive surveillance is also carried out through the control of some wild animals such as wolves or foxes.
Analysis of foodborne nematodes circulation in livestock and wildlife	Circulation of Toxocara spp was performed in wildlife.
Analysis of foodborne protozoan circulation in livestock and wildlife	Cryptosporidium spp presence was evaluated by passive surveillance.
Training, capacity building	
Title of activity	Scope
Training courses for Trichinella detection in meat	Despite the Covid-19 crisis, training sessions were organized on site to train technical staff to detect trichinella larvae in meat, according to the ISO 17843 method.
Organisation of a ring trial for Trichinella detection in meat by french certified labs	Laboratories' performance was evaluated for Trichinella detection in meat. Successful results allowed laboratories to get their agreement and accreditation delivered by competent authorities according to the ISO 17025.
Organisation of an international ring trial for Trichinella detection in meat	This ring test was organised at the request of private or public laboratories in EU Member States for the validation of their staff's qualifications.
Organisation of a ring trial for the serological detection of Toxoplasma gondii	This ring test was organised for the detection by ELISA of antibodies against Toxoplasma gondii in serum of small ruminants. Participation is not compulsory for french routine laboratories.

Provision of reference samples	Proficiency samples for Trichinella test habilitation of analysts were provided upon request to laboratories. These samples allowed analysts to practice the official tests, to evaluate their individual performance and maintain their habilitation.
Zoonoses	
Title of activity	Scope
Research programs for improvement of foodborne parasites detection	Development of serological tests for detection of antibodies against Trichinella in pigs and wild boars serum. Development of innovative tools to detect foodborne parasites (Trichinella, Toxoplasma, Cryptosporidium, Giardia) in different matrices.
Research programs for innovative and natural treatments	Development of new therapeutic approaches to control Cryptosporidium or Giardia in animals.
Wildlife	
Title of activity	Scope
Epidemiological investigations	Passive collection of data regarding the circulation of Trichinella spp, Toxoplasma gondii, Toxocara spp in wildlife such as wild boars.
Diagnosis, biotechnology and laboratory	
Title of activity	Scope
Diagnosis of Foodborne zoonotic parasites	Identification and confirmation of free parasites or within different matrices (meat, serum, feces) by direct methods, serological or molecular typing. (Trichinella spp, Anisakidae, Alaria alata, Toxoplasma gondii, Cryptosporidium spp, Giardia, Taenia(cysticercus)).
Reference and expertise activities on foodborne zoonotic parasites	Development of new tools to detect and control parasites (Trichinella spp, Toxocara spp, Toxoplasma gondii, Cryptosporidium spp, Giardia duodenalis)
Vaccines	
Title of activity	Scope
Development of vaccines to protect target animal species	Research programs are underway to develop vaccines against Trichinella in pigs and Toxoplasma gondii in cats
Food safety	
Title of activity	Scope
Foodborne protozoan detection on fresh vegetables	Ongoing research programs for improvement of protozoan detection on food matrices such as fresh green leaf salads.

ToR : To propose or develop methods and procedures that facilitate harmonisation of international standards and guidelines applicable to the designated specialty

2. Proposal or development of any procedure that will facilitate harmonisation of international regulations applicable to the surveillance and control of animal diseases, food safety or animal welfare

Proposal title	Scope/Content	Applicable area
Development of tests to detect trichinella in meat	Tests are needed to detect Trichinella infection in pigs for surveillance of indoors pigs reared in officially recognised holdings applying controlled housing conditions	<input checked="" type="checkbox"/> Surveillance and control of animal diseases <input checked="" type="checkbox"/> Food safety <input type="checkbox"/> Animal welfare
Development of molecular tools to identify parasitic nematodes in carcasses	During meat inspection for Trichinella, other nematodes can be found but remain difficult to identify at species level. There is a need to identify these nematodes for risk managers or decision makers with the aim to protect consumers. Toxocara spp can be indeed identified.	<input checked="" type="checkbox"/> Surveillance and control of animal diseases <input checked="" type="checkbox"/> Food safety <input type="checkbox"/> Animal welfare

ToR: To establish and maintain a network with other OIE Collaborating Centres designated for the same specialty, and should the need arise, with Collaborating Centres in other disciplines

ToR: To carry out and/or coordinate scientific and technical studies in collaboration with other centres, laboratories or organisations

3. Did your Collaborating Centre maintain a network with other OIE Collaborating Centres (CC), Reference Laboratories (RL), or organisations designated for the same specialty, to coordinate scientific and technical studies?

Yes

Name of OIE CC/RL/other organisation(s)	Location	Region of networking Centre	Purpose
OIE Collaborating Centre for foodborne zoonotic parasites	Saskatoon, Canada	<input type="checkbox"/> Africa <input checked="" type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East	<ul style="list-style-type: none"> - scientific collaborations; - exchange of proficiency samples (Trichinella); - members of the executive committee of the International Commission on Trichinellosis.
OIE Collaborating Centre for foodborne parasites from Asia-Pacific	Changchun, China	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input checked="" type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East	<ul style="list-style-type: none"> - scientific collaborations; - training of Chinese PhD student; - members of the executive committee of the International Commission on Trichinellosis.
OIE Reference Laboratory for Trichinellosis	Roma, Italy	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East	<ul style="list-style-type: none"> - scientific collaborations; - scientific expertise on trichinella diagnosis; - sharing expertise for EFSA's annual report on Trichinella.

4. Did your Collaborating Centre maintain a network with other OIE Collaborating Centres, Reference

laboratories, or organisations in other disciplines, to coordinate scientific and technical studies?

Yes

Name of OIE CC/RL/other organisation(s)	Location	Region of networking Centre	Purpose
WHO Collaborating Centre for Host - Schistosoma Interactions	Perpignan, France	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East	Scientific research program on biology of schistosoma hybrides, circulating in Africa and emerging in Corsica.
European Union Reference Laboratory for Parasites	Roma, Italy	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East	- Development of tools to improve Cryptosporidium and Giardia detection. - Validation of new tools to detect Trichinella in meat.

ToR: To place expert consultants at the disposal of the OIE.**5. Did your Collaborating Centre place expert consultants at the disposal of the OIE?**

No

ToR: To provide, within the designated specialty, scientific and technical training to personnel from OIE Member Countries**6. Did your Collaborating Centre provide scientific and technical training, within the remit of the mandate given by the OIE, to personnel from OIE Member Countries?**

Yes

- a) Technical visits: 1
 b) Seminars: 0
 c) Hands-on training courses: 1
 d) Internships (>1 month): 0

Type of technical training provided (a, b, c or d)	Content	Country of origin of the expert(s) provided with training	No. participants from the corresponding country
a, c	In vitro screening of natural molecules for the development of innovative treatments against Cryptosporidium	Ivory Coast	1

ToR: To organise and participate in scientific meetings and other activities on behalf of the OIE

7. Did your Collaborating Centre organise or participate in the organisation of scientific meetings on behalf of the OIE?

Yes

National/International	Title of event	Co-organiser	Date (mm/yy)	Location	No. Participants
International	Symposium of OIE Collaborating Centre for Foodborne zoonotic parasites	Within the framework of the 13th EMOP 2021 (European Multicolloquim of Parasitology)	October 2021	Belgrade, Serbia	50

ToR: To collect, process, analyse, publish and disseminate data and information relevant to the designated specialty

8. Publication and dissemination of any information within the remit of the mandate given by the OIE that may be useful to Member Countries of the OIE

a) Articles published in peer-reviewed journals: 7

1- Nedişan ME, Györke A, Ştefănuţ CL, Kalmár Z, Friss Z, Blaga R, Blaizot A, Toma-Naic A, Mircean V, Schares G, Djurković-Djaković O, Klun I, Villena I, Cozma V. « Experimental infection with *Toxoplasma gondii* in broiler chickens (*Gallus domesticus*): seroconversion, tissue cyst distribution, and prophylaxis. » *Parasitol Res.* 2021; 120(2):593-603. doi: 10.1007/s00436-020-06984-x.

2- Xu N, Bai X, Liu Y, Yang Y, Tang B, Shi HN, Vallee I, Boireau P, Liu X, Liu M. "The Anti-Inflammatory Immune Response in Early *Trichinella spiralis* Intestinal Infection Depends on Serine Protease Inhibitor-Mediated Alternative Activation of Macrophages." *J Immunol.* 2021; 206(5):963-977. doi: 10.4049/jimmunol.2000290.

3- Ait-Ammar N, Karadjian G, Foulet F, Chouk R, Gaultier F, Ortonne N, Yera H, Botterel F. "A lesion on the tip of the tongue." *Clin Microbiol Infect.* 2021; 24 :S1198-743X(21)00195-6. doi: 10.1016/j.cmi.2021.04.012.

4- Niederlender S, Fontaine JJ, Karadjian G. "Potential applications of aptamers in veterinary science." *Vet Res.* 2021; 52(1):79. doi: 10.1186/s13567-021-00948-4.

5- Beck B, Grochow T, Schares G, Blaga R, Le Roux D, Bangoura B, Dauschies A, Fietz SA. "Burden and regional distribution of *Toxoplasma gondii* cysts in the brain of COBB 500 broiler chickens following chronic infection with 76K strain." *Vet Parasitol.* 2021; 296:109497. doi: 10.1016/j.vetpar.2021.109497.

6- Boucard AS, Thomas M, Lebon W, Polack B, Florent I, Langella P, Bermúdez-Humarán LG. "Age and *Giardia intestinalis* Infection Impact Canine Gut Microbiota." *Microorganisms.* 2021; 9(9):1862. doi: 10.3390/microorganisms9091862.

7- Jin X, Yang Y, Ding J, Liu X, Shi H, Luo X, Jia W, Cai X, Vallee I, Boireau P, Bai X, Liu M. "Nod-like receptor pyrin domain containing 3 plays a key role in the development of Th2 cell-mediated host defenses against *Trichinella spiralis* infection." *Vet Parasitol.* 2021; 297:109159. doi: 10.1016/j.vetpar.2020.109159.

b) International conferences: 4

1. Wang, X Liu, A Heckmann, G Caignard, D Vitour, E Hirchaud, M Liu, P Boireau, G Karadjian, I Vallée. A *Trichinella spiralis* new born larvae specific protein, Ts-NBL1, interacts with host's cell vimentin. 13th European Multicolloquim of Parasitology (EMOP), Belgrade, Serbia, 12-15th October 2021.
2. M. Thomas, D. Aubert, S. Escotte-Binet, B. Durand, C. Robert, R. Geers, A. Alliot, G. Belbis, I. Villena, R. Blaga. Anatomical distribution of *Toxoplasma gondii* in naturally and experimentally infected lambs. 13th European Multicolloquim of Parasitology (EMOP), Belgrade, Serbia, 12-15th October 2021.
3. I Vallée, OIE collaborating centre for foodborne zoonotic parasites (European region): overview of activities. 13th European Multicolloquim of Parasitology (EMOP), Belgrade, Serbia, 12-15th October 2021.
4. M. Mammeri, L. Cartou, A. Chevillot, M. Thomas, C. Julien , I. Vallée , B. Polack, J. Follet, K. Adjou. First identification of *Cryptosporidium parvum* zoonotic subtype IlaA15G2R1 in diarrheal lambs in France. International Sheep Veterinary Congress Virtual Congress (ISVA) 23-26 November 2021.

c) National conferences: 0

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d) Other

(Provide website address or link to appropriate information): 0

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9. Additional comments regarding your report:

The Covid-19 sanitary crisis strongly impacted the organisation of training and hosting of scientists in the OIE CC during 2021.